IN THE CLAIMS

1. (Currently amended) A ~~neuromuscular monitoring~~ system using phonomyography for monitoring relaxation of a given muscle of a living subject, comprising:

means for applying muscle-activating stimulation signals to ~~a patient's~~ the living subject's body via at least one electrode to stimulate the given muscle of the living subject;

means for sensing pressure waveform signals produced by ~~a patient's muscle~~ the given muscle of the living subject in response to the applied stimulation signals; ~~and~~

means for processing the sensed pressure waveform signals [[,]] to produce data indicative of a level of relaxation of the given muscle of the living subject; and

means for displaying the data [[,]] indicative of the level of relaxation of the given muscle of the living subject from the processing means ~~, related to the sensed pressure waveform signals~~ .

2. (Currently amended) A ~~neuromuscular monitoring~~ system using phonomyography for monitoring relaxation of a given muscle of a living subject, comprising:

at least one neurostimulator to apply muscle-activating stimulation signals to ~~a patient's~~ the living subject's body via at least one electrode to stimulate the given muscle of the living subject ;

at least one pressure waveform sensor to detect pressure waveform signals produced by ~~a patient's~~ the given muscle of the living subject in response to the applied stimulation signals; ~~and~~

a processor of the detected pressure waveform signals to produce data indicative of a level of relaxation of the given muscle of the living subject; and

a display of the data , indicative of the level of relaxation of the given muscle of the living subject from the processor ~~, related to the detected pressure waveform signals~~ .

3. (Currently amended) The ~~neuromuscular monitoring~~ system of claim 2, wherein the data displayed through the display is selected from the group consisting of: raw pressure waveform signals detected through said at least one pressure waveform sensor, amplitudes of the pressure waveform signals, and ratios of said amplitudes.

4. (Currently amended) The ~~neuromuscular monitoring~~ system of claim 2, further comprising an amplifier for amplifying the pressure waveform signals detected by said at least one pressure waveform sensor.

5. (Currently amended) The ~~neuromuscular monitoring~~ system of claim 2, comprising a controller connected to said at least one neurostimulator and to said at least one pressure waveform sensor, said controller incorporating the processor and display.

6. (Currently amended) The ~~neuromuscular monitoring~~ system of claim 5, wherein the controller includes a laptop computer.

7. (Currently amended) The ~~neuromuscular monitoring~~ system of claim 5, wherein said controller includes a pocket computer.

8. (Currently amended) The ~~neuromuscular monitoring~~ system of claim 2, wherein said at least one neurostimulator includes a plurality of neurostimulators respectively associated to different muscles of the ~~patient~~ living subject.

9. (Currently amended) The ~~neuromuscular monitoring~~ system of claim 2, wherein said at least one pressure waveform sensor includes a plurality of pressure waveform sensors respectively associated to different muscles of the ~~patient~~ living subject.

10. (Currently amended) The ~~neuromuscular monitoring~~ system of claim 2, wherein said at least one pressure waveform sensor has a detection frequency bandwidth ranging from about 2 Hz to about 10 Hz.

11. (Currently amended) The ~~neuromuscular monitoring~~ system of claim 10, wherein said at least one pressure waveform sensor comprises at least one microphone.

12. (Currently amended) The ~~neuromuscular monitoring~~ system of claim 2, wherein the muscle-activating stimulation signals comprises single stimulation signals.

13. (Currently amended) ~~The neuromuscular monitoring system of claim 5,~~ A neuromuscular monitoring system using phonomyography, comprising:

at least one neurostimulator to apply muscle-activating stimulation signals to a patient's body via at least one electrode;

at least one pressure waveform sensor to detect pressure waveform signals produced by a patient's muscle in response to the applied stimulation signals; and

a controller connected to said at least one neurostimulator and to said at least one pressure waveform sensor, said controller including a processor of the detected pressure waveform signals and a display of data, from the processor, related to the detected pressure waveform signals;

wherein the controller is so configured as to:

[[-]] before the administration of a relaxant to the patient:

apply a predetermined muscle-activating stimulation signal to the patient's body through said at least one neurostimulator and via said at least one electrode;

sample the pressure waveform signal detected by said at least one pressure waveform sensor in response to the applied predetermined stimulation signal; and

measure a reference amplitude (A_{ref}) of the sampled signal; and

[[-]] after a relaxant has been administered to the patient:

apply the predetermined muscle-activating stimulation signal through said at least one neurostimulator and via said at least one electrode;

sample the pressure waveform signal detected by said at least one pressure waveform sensor in response to the applied predetermined stimulation signal;

measure an amplitude (A) of the response signal;

calculate a ratio A/A_{ref}; and

display the calculated ratio.

14. (Currently amended) ~~The neuromuscular monitoring system of claim 2,~~ A neuromuscular monitoring system using phonomyography, comprising:

at least one neurostimulator to apply muscle-activating stimulation signals to a patient's body via at least one electrode;

at least one pressure waveform sensor to detect pressure waveform signals produced by a patient's muscle in response to the applied stimulation signals; and

a processor of the detected pressure waveform signals and a display of data, from the processor, related to the detected pressure waveform signals;

wherein the muscle-activating stimulation signals ~~comprises~~ comprise train-of-four twitches.

15. (Currently amended) ~~The neuromuscular monitoring system of claim 5,~~

A neuromuscular monitoring system using phonomyography, comprising:

at least one neurostimulator to apply muscle-activating stimulation signals to a patient's body via at least one electrode;

at least one pressure waveform sensor to detect pressure waveform signals produced by a patient's muscle in response to the applied stimulation signals; and

a controller connected to said at least one neurostimulator and to said at least one pressure waveform sensor, said controller including a processor of the detected pressure waveform signals and a display of data, from the processor, related to the detected pressure waveform signals;

wherein the muscle-activating stimulation signals comprise train-of-four twitches, and wherein the controller is so configured as to:

measure a peak-to-peak amplitude of a pressure waveform signal detected by said at least one pressure waveform sensor in response to a first pulse of the train-of-four (T1);

measure a peak-to-peak amplitude of a pressure waveform signal detected by said at least one pressure waveform sensor in response a fourth pulse of the train-of-four (T4);

calculate a ratio T4/T1; and

display the calculated ratio.

16. (Original) A neuromuscular monitoring method using phonomyography, comprising:

providing at least one pressure waveform sensor;

positioning said at least one pressure waveform sensor at a predetermined position of a patient's body;

providing at least one electrode;

positioning said at least one electrode at a predetermined position of the patient's body;

applying a muscle-activating stimulation signal to the patient's body via said at least one electrode;

sampling a pressure waveform signal detected by said at least one pressure waveform sensor in response to the applied muscle-activating stimulation signal;

measuring a reference amplitude (A_{ref}) of the sampled signal;

- after a relaxant has been administered:

applying a subsequent muscle-activating stimulation signal to the patient's body via said at least one electrode;

sampling a subsequent pressure waveform signal detected by said at least one pressure waveform sensor in response to the subsequent muscle-activating stimulation signal;

measuring an amplitude (A) of the subsequent pressure waveform signal;

calculating a ratio A/A_{ref}; and

displaying the calculated ratio.

17. (Original) The neuromuscular monitoring method of claim 16, wherein applying a muscle-activating stimulation signal comprises applying a single pulse stimulation signal.

18. (Original) The neuromuscular monitoring method of claim 16, wherein measuring an amplitude comprises measuring a peak-to-peak amplitude.

19. (Currently amended) A ~~neuromuscular monitoring~~ method using phonomyography for monitoring relaxation of a muscle of a living subject, comprising:

providing at least one pressure waveform sensor;

positioning said at least one pressure waveform sensor at a first predetermined position of ~~a patient's~~ the living subject's body;

providing at least one electrode;

positioning the at least one electrode at a predetermined second position of the ~~patient's~~ living subject's body;

applying muscle-activating stimulation signals to the ~~patient's~~ living subject's body via said at least one electrode to stimulate the given muscle of the living subject;

sampling pressure waveform signals detected by said at least one pressure waveform sensor and produced by the given muscle of the living subject in response to the applied muscle-activating stimulation signals;

processing the sampled detected pressure waveform signals to produce data indicative of a level of relaxation of the given muscle of the living subject; and

displaying the data [[,]] indicative of the level of relaxation of the given muscle of the living subject from the act of processing ~~, related to the detected pressure waveform signals~~ .

20. (Currently amended) The ~~neuromuscular~~ monitoring method of claim 19, wherein:

processing the sampled detected pressure waveform signals comprises measuring amplitudes of the detected pressure waveform signals; and

displaying data comprises displaying the detected pressure waveform signals and the measured amplitudes.

21. (Currently amended) ~~The neuromuscular monitoring method of claim 19,~~ A neuromuscular monitoring method using phonomyography, comprising:

providing at least one pressure waveform sensor;

positioning said at least one pressure waveform sensor at a predetermined position of a patient's body;

providing at least one electrode;

positioning the at least one electrode at a predetermined position of the patient's body;

applying muscle-activating stimulation signals to the patient's body via said at least one electrode;

sampling pressure waveform signals detected by said at least one pressure waveform sensor in response to the applied muscle-activating stimulation signals;

processing the detected pressure waveform signals; and

displaying data, from the act of processing, related to the detected pressure waveform signals;

wherein applying muscle-activating stimulation signals comprises applying train-of-four twitches.

22. (Currently amended) ~~The neuromuscular monitoring method of claim 20,~~ A neuromuscular monitoring method using phonomyography, comprising:

providing at least one pressure waveform sensor;

positioning said at least one pressure waveform sensor at a predetermined position of a patient's body;

providing at least one electrode;

positioning the at least one electrode at a predetermined position of the patient's body;

applying muscle-activating stimulation signals to the patient's body via said at least one electrode;

sampling pressure waveform signals detected by said at least one pressure waveform sensor in response to the applied muscle-activating stimulation signals;

processing the sampled detected pressure waveform signals; and

displaying data, from the act of processing, related to the detected pressure waveform signals;

- wherein:

processing the sampled detected pressure waveform signals comprises measuring amplitudes of the detected pressure waveform signals; and

displaying data comprises displaying the detected pressure waveform signals and the measured amplitudes; and

-wherein applying muscle-activating stimulation signals comprises applying train-of-four twitches, and wherein measuring amplitudes of the detected pressure waveform signals comprises:

measuring a peak-to-peak amplitude of the pressure waveform signal detected by said at least one pressure waveform sensor in response to a first pulse of each train-of-four (T1);

measuring a peak-to-peak amplitude of the pressure waveform signal detected by said at least one pressure waveform sensor in response to a fourth pulse of the same train-of-four (T4); and

calculating a ratio T4/T1.

23. (Currently amended) The neuromuscular monitoring method of claim 22, wherein displaying the measured amplitudes comprises displaying the T4/T1 calculated ratio.